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ABSTRACT

There are several difficulties that hinder the planning of regional communications networks: (1) an over-reliance on the federal government to initiate planning; (2) lack of evidence that the investment will produce adequate returns; and (3) a pervasive feeling that the communications industry is necessarily dominated by advertising. Communications networks appear to be amenities when compared to the dramatic social impact of a new hospital. To impress planners, the potential endpoints of the communications web (i.e., hospital to library) must be emphasized in the context of their potential social value. Flexibility and user control should also be incorporated in new communications networks. (EMH)

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Robust Approaches to Regional Communications Planning

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This paper truly begins with an impatient set of questions which nag at a great many workers in the vineyard: "Why is it so hard—why has it taken so long -- to get most regional planning agencies to do anything about communications? Why can't they see, what is so obvious to anyone who bothers to look, that communications planning would complement their established interests in land use, transportation and facilty networks?"

This "true" beginning suffers from the frustrated passions of advocacy and is an uncertain guide to inquiry. Has the communications case really taken longer or been more difficult than the comparable effort to integrate land use and transportation planning or to develop regional approaches to housing policy? How hard is hard? How long is long? The formal beginning -- the proper questions to which this paper is addressed -- thus has a more detached phrasing: "What are the difficulties which inhibit regional communications planning? How may these difficulties be addressed?"

In examining these questions, I would like to gloss over the problem of defining a region. Virtually everything which I will say about formal regional planning agencies holds almost equally as well for city planning commissions. I'm content with the definition offered by a distinguished colleague: "a region is one unit larger than that for which one has previously failed to plan." Weary veterans of FCC-OTP wars may only want to add: "or one unit smaller."

There are a great many obvious difficulties and lest I be accused of ignoring overt in favor of hidden problems, I will list them briefly.

1. City and regional planning agencies are heavily dominated by Federally mandated programs. Until Washington demands communications planning, only scattered agencies will do much on their own.

True enough but the answer only displaces the question to another level of government. Washington has mandated extensive activity designed to coordinate investments in medical facilties, to extend job opportunities, to integrate schools and to encourage citizen participation but has not seen these as issues which might be addressed by systematic intervention in the communication infrastructure of a region.

2. There is not much hard evidence that remote communication can powerfully change established patterns of land use, transportation or facility design. Hence there really isn't much to say to the sober regional planning director after the first hortatory invocation of future possibilities is concluded.

This statement -- to quote another colleague -- is "merely" true. The paucity of evidence is a measure of the lack of risk taking investment and inquiry rather than of failure in what has been done. The current experiments in the use of cable for social services are very interesting but I doubt that even their most enthusiastic supporters would deny that they are very modest and hesitant feelers in a very large sea of possiblities.

3. Issues surrounding the collection of audiences and their sale to advertisers dominate the communications policy agenda, either driving-out or distracting attention away from other concerns.

This is by no means a superficial problem. The first years of this confidence -- avante garde as it is -- were dominated by the "collection" issues and they still play a major role on our agenda. Back home, arguing before city and regional agencies, most communication planners constantly confront a paradigm in which the technology of television is preempted by a single industry so that all other matters (ordinarily called "public service") are treated as peripheral -- to be settled in due course after the great issues are resolved.

There are a good many reasons why the "collection" (or perhaps I should say, "FCC") issue so dominates communications planning. Without attempting an extended discussion, it does not appear to me, however, that the importance of the issue, in and of itself, requires its preeminence. There are certainly a great many policy domains in which vital matters (as acknowledgeed by the participants) are left for last. The collection issue is so hard to budge because it is relatively so clear-cut and so simple. A small number of firms, on the one side, earn substantial profits from the sale of audiences and are caught in a quite ordinary struggle to protect those profits against other claimants. On the other side, millions of Americans earn very substantial

wages in return for their attention. The wages are earned without much exertion, there are relatively few alternative sources of payment during the same time periods and when they are available (or desired) they can be claimed without imperilling the chance of returning at will to the old job of tv-viewing. The politics which surround the level and distribution of this wage are also quite ordinary -- similar in structure to those trade union bargaining situations in which the labor representatives are vaguely in cahoots with management, the union is internally divided and management presumes to know what's good for the employees.

The fact that the terms of conflict are relatively simple does not, of course, mean that the conflict can be easily solved. It does, however, appear that simple issues drive out more complex matters. Until we solve the problem of the importation of distant signals, city and regional public officials hardly seem willing to discuss the changes in the delivery of medical, welfare and educational services which might be generated by a high capacity communication network.

That reluctance, I would argue, (I have argued) is a mistake. Fully developed point-to-point networks in the service of a broad variety of institutions scattered across a region would facilitate the resolution of "collection" issues whereas the reverse may not be true. This drives me back to the original question. Why is it that the communications planning task within and between institutions is so difficult?

The Source of Difficulty

Communications planners begin with the quite sensible insight that city and regional agencies are already deeply involved in communications issues. Transportation, land use and home and facility design all concretely express choices about the pattern in which information will be transmitted and will be used. It seems a small step then to adopt an overt posture so as to undertake the analysis and, if appropriate, the design of telecommunication links.

The step is, however, a large one. All of the ordinary "communications" planning efforts of city and regional agencies only indirectly and weakly shape behavior. You can bring diverse classes together in a heterogenous housing

project but you cannot force them to interact. You can build a road between two neighborhoods but the residents needn't speak to one another. You can rearrange the location of health clinics so as to increase their availability but physicians and patients are not thereby forced to communicate in a new way.

Since this weakly determinate effect is an advantage from the perspective of many participants in the process of interaction its important to understand how it is achieved. Broadly, it seems to me, most of these communication interventions adapt so flexibly to current perferences because they combine the movement of information and energy -- of "talk" and action -- and because they all provide for a greater variety and redundancy of messages and channels. A street or a corridor - in the parlance of the a-v specialists -- is a multi-media center.

In contrast, formal communication analysis and design activities proceed characteristically in an opposite direction. In order to change the distribution of messages or to increase the effectiveness and efficiency of their use, information and energy movements are initially separated so that they can be recombined in a new pattern. The tangle of channel use in everyday life is also decomposed into elements so as to allow for pattern changes. In all of these efforts, formal communications planning attempts to be strongly determinative of behavior. In contrast to the design of a hospital, for example, the system which links Massachusetts General to Logan Airport specifies the protocols of client-professional and intra-professional interaction quite specifically. Formal communications planning is intrinsically a search for strongly than weakly determinative interventions into established practice.

Strong interventions quite clearly present particularly difficult problems for city and regional planning agencies who usually enjoy the freedom to speculate at the cost of distance from the day-to-day exercise of authority. Small movements towards strong interventions in the integration of land use and transportation, in growth management and in the creation of regional housing programs have engendered enormous difficulties and in some cases have virtually brought all activity to a halt.

The managers of particular organizations are not in a dramatically different position from that of the planners. Hospital administrators, university

presidents, school superintendents and welfare directors officiate over delicately balanced bureaucracies in which strong interventions into the pattern of communication are commonly met with suspicion and apprehension. Questioned as to the potential uses of new communication systems, these leaders commonly respond with either a blank stare, or a set of suggestions which lie at the periphery of their major missions. Decomposing the core of their activities so as to combine them in new ways does not immediately suggest itself as a promising organizational tack.

Towards Robust Designs

There are two very different responses to the special difficulties of communication planning. They may indeed be complementary in the long run but for the moment they tug the planning community in opposite directions.

The first response is characteristic of the research community. Faced with a complex intervention into the behavior of individuals or groups -- it may be a house, an economic policy or a communications network -- the research strategy is to analyze the components of the intervention so as to increase the detailed correctness of its design. The analytic method may take the form of controlled laboratory experiments or of computer simulations of complex networks. At the risk of beating an ideal rather than a real type, it seems to me that the dream that these methods applied to communications networks can "get things just right" is bound to be frustrated. Model builders understand this -- but only partially, I think -- when they discuss the sensitivity of a simulation to errors or variations. The field, I would argue, is not merely sloppy and uncertain, it is positively ornery. Precisely because direct interventions into communication behavior are strong rather than weak, they must always confront a counter-assault upon them. Under the worst of circumstances this takes the form of a frontal attack on the new technology and norms; under the best, a subtle and sympathetic attempt to turn the new pattern to serve old preferences.

The second direction of response has many practitioners but few theoreticians. Its advocates are easily put-down by the clarity and prestige of the research paradigm. Broadly, I would describe this direction as the

search for robust design methods and robust designs. To survive a counter-assault, a new communications network must lose its strongly determinative character; it must, if you like paradoxes, become a weak intervention.

There are, of course, a great many forms of weakness. The Bell system is by far the largest communications planning agency in the country -- indeed, in initially ignoring it I may have appeared to underestimate the extent of current activity -- and essentially succeeds by dealing in very small increments with the established patterns of firms and households. By working at the cosmopolitan fringe with a close regard for what its advertising campaign calls "the bottom line", it maintains and extends an enormous capital investment.

Communications planning with a redistributive intent easily but inappropriately lapses into the incremental mode. The design problem is to preserve the hope of major change while weakening the directive force of the intervention. This is no mean trick. In general -- I wish that there were a convincing set of particulars upon which I could draw -- it seems to call for a rich developmental strategy with at least three important attributes:

1. <u>The design should encompass both nodes and channels</u>. This may appear to strengthen the intervention by forcing changes in the internal organization of clinics or libraries (to use two examples) rather than merely in the linking elements. Its only when the nodes are fully engaged, however, that the system can develop adequate redundancy and variety and that the participants can help to reshape it to suit their preference.

2. <u>The design should allow for very substantial user control and learning</u>. The research tradition often labors mightily to discover in advance what people might prefer instead of allowing them to cultivate their own preferences over time in interaction with a fluid set of possibilities. A robust design -- such as the one being used in the senior citizen's experiment in Reading -- develops (hopefully) substantial tolerance for goofs precisely because the users can reshape it.

3. <u>The value of robustness must be recognized in the evaluative protocols</u>. When I first started using the idea of robustness I found an excessively sympathetic response so occasionally now I like to substitute "sloppy"

for "robust" in order to emphasize a difficult point. A design which appears as protean rather than crystalline inevitably requires excess channel capacity, unread print material, underutilized personnel and a tolerance for mistakes. None of those score well in cost/benefit and cost/effectiveness measuring protocols. Once their value is recognized, however, another problem emerges. How much excess is too much? How much variety destroys the structure of the intervention? An evaluation process for robust designs must somehow find an appropriate middle space between the fragile precision of the tight ship and the sloppiness of unbounded excess.

Experienced city and regional planners will recognize in these attributes demanding specifications which combine traditions of work which do not sit easily together. Communications planning is intrinsically associated with techno-structural strategies of social intervention and yet it requires the skill and patience of the T-group leader and the organizational change agent.[1] I hope that this brief sketch of the idea of robust design, when more fully developed, will provide a set of principles which may embolden city and regional planning agencies to undertake this merger of traditions. In the limited setting of this conference, I simply raise a question about the adequacy of the research paradigm as a design guide.

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1. The typology is drawn from Harvey A. Hornstein, et al., eds., Social Intervention: A Behavioral Science Approach (New York: Free Press, 1971).